



# Definitions

## What is HIV?

HIV (human immunodeficiency virus) is the virus that causes AIDS. This virus may be passed from one person to another when infected blood, semen, or vaginal secretions come in contact with an uninfected person's broken skin or mucous membranes\*. In addition, infected pregnant women can pass HIV to their baby during pregnancy or delivery, as well as through breast-feeding. People with HIV have what is called HIV infection. Some of these people will develop AIDS as a result of their HIV infection.

For more information see ["What is AIDS?"](#)

\* A mucous membrane is wet, thin tissue found in certain openings to the human body. These can include the mouth, eyes, nose, vagina, rectum, and opening of the penis.

## Where did HIV come from?

The earliest known case of HIV-1 in a human was from a blood sample collected in 1959 from a man in Kinshasa, Democratic Republic of Congo. (How he became infected is not known.) Genetic analysis of this blood sample suggested that HIV-1 may have stemmed from a single virus in the late 1940s or early 1950s.

We know that the virus has existed in the United States since at least the mid- to late 1970s. From 1979-1981 rare types of pneumonia, cancer, and other illnesses were being reported by doctors in Los Angeles and New York among a number of male patients who had sex with other men. These were conditions not usually found in people with healthy immune systems.

In 1982 public health officials began to use the term "acquired immunodeficiency syndrome," or AIDS, to describe the occurrences of opportunistic infections, Kaposi's sarcoma (a kind of cancer), and *Pneumocystis carinii* pneumonia in previously healthy people. Formal tracking (surveillance) of AIDS cases began that year in the United States.

In 1983, scientists discovered the virus that causes AIDS. The virus was at first named HTLV-III/LAV (human T-cell lymphotropic virus-type III/lymphadenopathy-associated virus) by an international scientific committee. This name was later changed to HIV (human immunodeficiency virus).

For many years scientists theorized as to the origins of HIV and how it appeared in the human population, most believing that HIV originated in other primates. Then in 1999, an international team of researchers reported that they had discovered the origins of HIV-1, the predominant strain of HIV in the developed world. A subspecies of chimpanzees native to west equatorial Africa had been identified as the original source of the virus. The researchers believe that HIV-1 was introduced into the human population when hunters became exposed to infected blood.

For more information on this discovery, visit the NIH National Institute of Allergy and Infectious Diseases press release at <http://www.niaid.nih.gov/newsroom/releases/hivorigin.htm>.

## What is AIDS?

**AIDS** stands for **A**cquired **I**mmunodeficiency **S**yndrome.

**Acquired** – means that the disease is not hereditary but develops after birth from contact with a disease causing agent (in this case, HIV).

**Immunodeficiency** – means that the disease is characterized by a weakening of the immune system.

**Syndrome** – refers to a group of symptoms that collectively indicate or characterize a disease. In the case of AIDS this can include the development of certain infections and/or cancers, as well as a decrease in the number of certain cells in a person's immune system.

A diagnosis of AIDS is made by a physician using specific clinical or laboratory standards.

## What causes AIDS?

AIDS is caused by infection with a virus called human immunodeficiency virus (HIV). This virus is passed from one person to another through blood-to-blood and sexual contact. In addition, infected pregnant women can pass HIV to their babies during pregnancy or delivery, as well as through breast feeding. People with HIV have what is called HIV infection. Some of these people will develop AIDS as a result of their HIV infection.

## How long does it take for HIV to cause AIDS?

Prior to 1996, scientists estimated that about half the people with HIV would develop AIDS within 10 years after becoming infected. This time varied greatly from person to person and depended on many factors, including a person's health status and their health-related behaviors.

Since 1996, the introduction of powerful anti-retroviral therapies has dramatically changed the progression time between HIV infection and the development of AIDS. There are also other medical treatments that can prevent or cure some of the illnesses associated with AIDS, though the treatments do not cure AIDS itself. Because of these advances in drug therapies and other medical treatments, estimates of how many people will develop AIDS and how soon are being recalculated, revised, or are currently under study.

As with other diseases, early detection of infection allows for more options for treatment and preventative health care.

# Symptoms and Testing

## How can I tell if I'm infected with HIV? What are the symptoms?

The only way to know if you are infected is to be tested for HIV infection. You cannot rely on symptoms to know whether or not you are infected with HIV. Many people who are infected with HIV do not have any symptoms at all for many years.

The following **may be** warning signs of infection with HIV:

- rapid weight loss
- dry cough
- recurring fever or profuse night sweats
- profound and unexplained fatigue
- swollen lymph glands in the armpits, groin, or neck
- diarrhea that lasts for more than a week
- white spots or unusual blemishes on the tongue, in the mouth, or in the throat
- pneumonia
- red, brown, pink, or purplish blotches on or under the skin or inside the mouth, nose, or eyelids
- memory loss, depression, and other neurological disorders

However, no one should assume they are infected if they have any of these symptoms. Each of these symptoms can be related to other illnesses. Again, **the only way to determine whether you are infected is to be tested for HIV infection.**

Similarly, you cannot rely on symptoms to establish that a person has AIDS. **The symptoms of AIDS are similar to the symptoms of many other illnesses.** AIDS is a medical diagnosis made by a doctor based on specific criteria established by the CDC.

## What are the different HIV screening tests available in the U.S.?

In most cases the EIA (enzyme immunoassay), performed on blood drawn from a vein, is the standard screening test used to detect the presence of antibodies to HIV. A reactive EIA must be used with a follow-up confirmatory test such as the Western blot to make a positive diagnosis.

There are EIA tests that use other body fluids to identify antibodies to HIV. These include:

- Oral Fluid Tests – use oral fluid (not saliva) that is collected from the mouth using a special collection device. This is an EIA antibody test similar to the standard blood EIA test and requires a follow-up confirmatory Western Blot using the same oral fluid sample.
- Urine Tests – use urine instead of blood. The sensitivity and specificity (accuracy) are somewhat less than that of the blood and oral fluid tests. Reactive test results must be confirmed with a blood-based Western Blot.

Home testing kits:

- Can be purchased in most pharmacies and via the Internet and involve no actual testing of the blood by the person using the kit. The only “at-home” components of the testing process involve the collection of a small sample of blood using a finger stick and the receipt of the results over the phone. First, the blood sample is mailed to the manufacturer for a standard EIA test. The consumer must call a phone number several days later to receive the results and be offered the choice of speaking to a trained counselor. A positive result must be confirmed with a blood-based Western Blot.

Rapid tests:

- A rapid test is a screening test that produces very quick results, in approximately 20-60 minutes. In comparison, results from the other more commonly used HIV antibody screening test, the enzyme immunoassay (EIA), are not available for several days to a few weeks.

Both the rapid test and the EIA look for the presence of antibodies to HIV. As is true for all screening tests, a reactive rapid HIV test result must be confirmed with a follow-up confirmatory test before a final diagnosis of infection can be made.

[More on rapid HIV testing...](#)

There are other tests that are used in screening the blood supply and for rare cases when standard tests are unable to detect antibodies to HIV.

For additional information on the various types of HIV tests, visit the Food and Drug Administration (FDA) Center for Biologics Evaluation and Research at:  
<http://www.fda.gov/cber/products/testkits.htm>

## **How long after a possible exposure should I wait to get tested for HIV?**

The tests commonly used to detect HIV infection are actually looking for antibodies produced by an individual's immune system when they are exposed to HIV. Most people will develop detectable antibodies within two to eight weeks (the average is 25 days). Ninety seven percent will develop antibodies in the first three months following the time of their infection. In very rare cases, it can take up to six months to develop antibodies to HIV.

For information on where to find an HIV testing site, visit the National HIV Testing Resources Web site at <http://www.hivtest.org>.

## Where can I get tested for HIV infection?

Many places provide testing for HIV infection. Common testing locations include local health departments, clinics, offices of private doctors, hospitals, and sites specifically set up to provide HIV testing. To find a testing site near you, visit the National HIV Testing Resources web site at <http://www.hivtest.org>.

**Between the time of a possible exposure and the receipt of test results, individuals should consider abstaining from sexual contact with others or use condoms and/or dental dams during all sexual encounters.**

It is important to seek testing at a place that also provides counseling about HIV prevention and AIDS. Counselors can answer any questions you might have about risky behaviors and ways you can protect yourself and others in the future. In addition, they can help you understand the meaning of the test results and describe what HIV/AIDS-related resources are available in the local area.

Consumer-controlled test kits (popularly known as "home test kits") were first licensed in 1997. Although home HIV tests are sometimes advertised through the Internet, currently only the [Home Access HIV-1 Test System](#) is approved by the Food and Drug Administration. (The accuracy of other home test kits cannot be verified.) [The Home Access HIV-1 Test System](#) can be found at most local drug stores. The testing procedure involves pricking a finger with a special device, placing drops of blood on a specially treated card, and then mailing the card in to be tested at a licensed laboratory. Customers are given an identification number to use when phoning in for the results. Callers may speak to a counselor before taking the test, while waiting for the test result, and when the results are given. All individuals receiving a positive test result are provided referrals for a follow-up confirmatory test, as well as information and resources on treatment and support services.

## If I test HIV negative, does that mean that my partner is HIV negative also?

No. Your HIV test result reveals only *your* HIV status. Your negative test result does not indicate whether or not your partner has HIV.

HIV is not necessarily transmitted every time there is an exposure. Therefore, your taking an HIV test should not be seen as a method to find out if your partner is infected. Testing should never take the place of protecting yourself from HIV infection. If your behaviors are putting you at risk for exposure to HIV, it is important to reduce your risks.

Not having (abstaining from) sex is the most effective way to avoid HIV. If you choose to have sex, use a latex condom to help protect both you and your partner from HIV and other STDs. Studies have shown that latex condoms are very effective, though not perfect, in preventing HIV transmission when used correctly and consistently. If either partner is allergic to latex, plastic (polyurethane) condoms for either the male or female can be used.

## What if I test positive for HIV?


If you test positive for HIV, the sooner you take steps to protect your health, the better. Early medical treatment and a healthy lifestyle can help you stay well. Prompt medical care may delay the onset of AIDS and prevent some life-threatening conditions. There are a number of important steps you can take immediately to protect your health:

- See a licensed health care provider, even if you do not feel sick. Try to find a health care provider who has experience treating HIV. There are now many medications to treat HIV infection and help you maintain your health. It is never too early to start thinking about treatment possibilities.
- Have a TB (tuberculosis) test. You may be infected with TB and not know it. Undetected TB can cause serious illness, but it can be successfully treated if caught early.
- Smoking cigarettes, drinking too much alcohol, or using illegal drugs (such as cocaine) can weaken your immune system. There are programs available that can help you reduce or stop using these substances.

There is much you can do to stay healthy. Learn all that you can about maintaining good health.

Not having (abstaining from) sex is the most effective way to avoid transmitting HIV to others. If you choose to have sex, use a latex condom to help protect your partner from HIV and other STDs. Studies have shown that latex condoms are very effective, though not perfect, in preventing HIV transmission when used correctly and consistently. If either partner is allergic to latex, plastic (polyurethane) condoms for either the male or female can be used.

## Why is CDC recommending that all pregnant women be tested for HIV?

There are now medical therapies available to lower the chance of an HIV-infected pregnant woman passing HIV to her infant before, during, or after birth. ZDV (zidovudine, also known as AZT or Retrovir) is the only drug which has been proven to reduce perinatal transmission. Refer to the [Public Health Service Task Force Recommendations for Use of Antiretroviral Drugs in Pregnant HIV-1-Infected Women for Maternal Health and Interventions to Reduce Perinatal HIV-1 Transmission in the United States](#)  for more information.

HIV testing and counseling provides an opportunity for infected women to find out if they are infected and to gain access to medical treatment that may help to delay disease progression. It also allows them to make informed choices during delivery that can prevent transmission to their infant. For women who are not infected, HIV counseling provides an opportunity to learn important prevention information to reduce the possibility of future exposures.

# Transmission

## How is HIV passed from one person to another?

HIV transmission can occur when blood, semen (cum), pre-seminal fluid (pre-cum), vaginal fluid, or breast milk from an infected person enters the body of an uninfected person.

HIV can enter the body through a vein (e.g., injection drug use), the lining of the anus or rectum, the lining of the vagina and/or cervix, the opening to the penis, the mouth, other mucous membranes (e.g., eyes or inside of the nose), or cuts and sores. Intact, healthy skin is an excellent barrier against HIV and other viruses and bacteria.

These are the most common ways that HIV is transmitted from one person to another:

- by having sex (anal, vaginal, or oral) with an HIV-infected person;
- by sharing needles or injection equipment with an injection drug user who is infected with HIV; or
- from HIV-infected women to their babies before or during birth, or through breast-feeding after birth.

HIV also can be transmitted through receipt of infected blood or blood clotting factors. However, since 1985, all donated blood in the United States has been tested for HIV. Therefore, the risk of infection through transfusion of blood or blood products is extremely low. The U.S. blood supply is considered to be among the safest in the world.

For more information, see "[How safe is the blood supply in the United States?](#)")

Some health-care workers have become infected after being stuck with needles containing HIV-infected blood or, less frequently when infected blood comes in contact with a worker's open cut or is splashed into a worker's eyes or inside their nose. There has been only one instance of patients being infected by an HIV-infected dentist to his patients.

## Which body fluids transmit HIV?

These body fluids have been shown to contain high concentrations of HIV:

- blood
- semen
- vaginal fluid
- breast milk
- other body fluids containing blood

The following are additional body fluids that may transmit the virus that health care workers may come into contact with:

- fluid surrounding the brain and the spinal cord
- fluid surrounding bone joints
- fluid surrounding an unborn baby

HIV has been found in the saliva and tears of some persons living with HIV, but in very low quantities. It is important to understand that finding a small amount of HIV in a body fluid does not necessarily mean that HIV can be *transmitted* by that body fluid. HIV has *not* been recovered from the sweat of HIV-infected persons. Contact with saliva, tears, or sweat has never been shown to result in transmission of HIV.

## Can I get HIV from kissing?

On the Cheek:

HIV is not transmitted casually, so kissing on the cheek is very safe. Even if the other person has the virus, your unbroken skin is a good barrier. No one has become infected from such ordinary social contact as dry kisses, hugs, and handshakes.

Open-Mouth Kissing:

Open-mouth kissing is considered a very low-risk activity for the transmission of HIV. However, prolonged open-mouth kissing could damage the mouth or lips and allow HIV to pass from an infected person to a partner and then enter the body through cuts or sores in the mouth. Because of this possible risk, the CDC recommends against open-mouth kissing with an infected partner.

One case suggests that a woman became infected with HIV from her sex partner through exposure to contaminated blood during open-mouth kissing.

## Can I get HIV from oral sex?

Yes, it is possible for either partner to become infected with HIV through performing or receiving oral sex. There have been a few cases of HIV transmission from performing oral sex on a person infected with HIV. While no one knows exactly what the degree of risk is, evidence suggests that the risk is less than that of unprotected anal or vaginal sex.

If the person performing oral sex has HIV, blood from their mouth may enter the body of the person receiving oral sex through

- the lining of the urethra (the opening at the tip of the penis);
- the lining of the vagina or cervix;
- the lining of the anus; or
- directly into the body through small cuts or open sores.

If the person receiving oral sex has HIV, their blood, semen (cum), pre-seminal fluid (pre-cum), or vaginal fluid may contain the virus. Cells lining the mouth of the person performing oral sex may allow HIV to enter their body.



The risk of HIV transmission increases

- if the person performing oral sex has cuts or sores around or in their mouth or throat;
- if the person receiving oral sex ejaculates in the mouth of the person performing oral sex;  
or
- if the person receiving oral sex has another sexually transmitted disease (STD).

## Can I get HIV from anal sex?

Yes. In fact, unprotected (without a condom) anal sex (intercourse) is considered to be very risky behavior. It is possible for either sex partner to become infected with HIV during anal sex. HIV can be found in the blood, semen, pre-seminal fluid, or vaginal fluid of a person infected with the virus. In general, the person receiving the semen is at greater risk of getting HIV because the lining of the rectum is thin and may allow the virus to enter the body during anal sex. However, a person who inserts his penis into an infected partner also is at risk because HIV can enter through the urethra (the opening at the tip of the penis) or through small cuts, abrasions, or open sores on the penis.

Not having (abstaining from) sex is the most effective way to avoid HIV. If people choose to have anal sex, they should use a latex condom. Most of the time, condoms work well. However, condoms are more likely to break during anal sex than during vaginal sex. Thus, even with a condom, anal sex can be risky. A person should use generous amounts of water-based lubricant in addition to the condom to reduce the chances of the condom breaking.

## Can I get HIV from vaginal sex\* ?

Yes, it is possible for either partner to become infected with HIV through vaginal sex\* (intercourse). In fact, it is the most common way the virus is transmitted in much of the world. HIV can be found in the blood, semen (cum), pre-seminal fluid (pre-cum) or vaginal fluid of a person infected with the virus.

In women, the lining of the vagina can sometimes tear and possibly allow HIV to enter the body. HIV can also be directly absorbed through the mucous membranes that line the vagina and cervix.

In men, HIV can enter the body through the urethra (the opening at the tip of the penis) or through small cuts or open sores on the penis.

Risk for HIV infection increases if you or a partner has a sexually transmitted disease (STD). See also ["Is there a connection between HIV and other sexually transmitted diseases?"](#)

Not having (abstaining from) sex is the most effective way to avoid HIV. If you choose to have vaginal sex, use a latex condom to help protect both you and your partner from HIV and other STDs. Studies have shown that latex condoms are very effective, though not perfect, in preventing HIV transmission when used correctly and consistently. If either partner is allergic to latex, plastic (polyurethane) condoms for either the male or female can be used.

## Can I get HIV from getting a tattoo or through body piercing?

A risk of HIV transmission does exist if instruments contaminated with blood are either not sterilized or disinfected or are used inappropriately between clients. CDC recommends that instruments that are intended to penetrate the skin be used once, then disposed of or thoroughly cleaned and sterilized between clients.

Personal service workers who do tattooing or body piercing should be educated about how HIV is transmitted and take precautions to prevent transmission of HIV and other blood-borne infections in their settings.

If you are considering getting a tattoo or having your body pierced, ask staff at the establishment what procedures they use to prevent the spread of HIV and other blood-borne infections, such as the hepatitis B virus. You also may call the local health department to find out what sterilization procedures are in place in the local area for these types of establishments.

## Can I get HIV from a bite?

### Human Bite:

In 1997, CDC published findings from a state health department investigation of an incident that suggested blood-to-blood transmission of HIV by a human bite. There have been other rare reports in the medical literature in which HIV appeared to have been transmitted by a bite. Severe trauma with extensive tissue tearing and damage and presence of blood were reported in each of these instances. Biting is not a common way of transmitting HIV. In fact, there are numerous reports of bites that did *not* result in HIV infection.

### Non-Human Bite:

HIV is a virus that infects humans and thus cannot be transmitted to or carried by non-human animals. The only exception to this is a few chimpanzees in laboratories that have been artificially infected with HIV. Because HIV is not found in non-human animals it is not possible for HIV to be transmitted from an animal bite, such as from a dog or cat.

Some animals can carry viruses that are similar to HIV, such as FIV (Feline Immunodeficiency Virus) found in cats or SIV (Simian Immunodeficiency Virus) found in apes. These viruses can only exist in their specific animal host and are not transmissible to humans.

## Can I get HIV from mosquitoes?

No. From the start of the HIV epidemic there has been concern about HIV transmission from biting and bloodsucking insects, such as mosquitoes. However, studies conducted by the CDC and elsewhere have shown no evidence of HIV transmission from mosquitoes or any other insects - even in areas where there are many cases of AIDS and large populations of mosquitoes. Lack of such outbreaks, despite intense efforts to detect them, supports the conclusion that HIV is not transmitted by insects.

The results of experiments and observations of insect biting behavior indicate that when an insect bites a person, it does not inject its own or a previously bitten person's or animal's blood into the next person bitten. Rather, it injects saliva, which acts as a lubricant so the insect can feed efficiently. Diseases such as yellow fever and malaria are transmitted through the saliva of specific species of mosquitoes. However, HIV lives for only a short time inside an insect and, unlike organisms that are transmitted via insect bites, HIV does not reproduce (and does not survive) in insects. Thus, even if the virus enters a mosquito or another insect, the insect does not become infected and cannot transmit HIV to the next human it bites.

There also is no reason to fear that a mosquito or other insect could transmit HIV from one person to another through HIV-infected blood left on its mouth parts. Several reasons help explain why this is so. First, infected people do not have constantly high levels of HIV in their blood streams. Second, insect mouth parts retain only very small amounts of blood on their surfaces. Finally, scientists who study insects have determined that biting insects normally do not travel from one person to the next immediately after ingesting blood. Rather, they fly to a resting place to digest the blood meal.

## **Can I get HIV while playing sports?**

There are no documented cases of HIV being transmitted during participation in sports. The very low risk of transmission during sports participation would involve sports with direct body contact in which bleeding might be expected to occur.

If someone is bleeding, their participation in the sport should be interrupted until the wound stops bleeding and is both antiseptically cleaned and securely bandaged. There is no risk of HIV transmission through sports activities where bleeding does not occur.

## **Can I get HIV from casual contact (shaking hands, hugging, using a toilet, drinking from the same glass, or the sneezing and coughing of an infected person)?**

No. HIV is not transmitted by day-to-day contact in the workplace, schools, or social settings. HIV is not transmitted through shaking hands, hugging, or a casual kiss. You cannot become infected from a toilet seat, a drinking fountain, a door knob, dishes, drinking glasses, food, or pets.

HIV is not an airborne or food-borne virus, and it does not live long outside the body. HIV can be found in the blood, semen, or vaginal fluid of an infected person. The three main ways HIV is transmitted are

- through having sex (anal, vaginal, or oral) with someone infected with HIV.
- through sharing needles and syringes with someone who has HIV.
- through exposure (in the case of infants) to HIV before or during birth, or through breast feeding.

# Prevention

## How Effective Are Latex Condoms in Preventing HIV?

Latex condoms, when used consistently and correctly, are highly effective in preventing heterosexual sexual transmission of HIV, the virus that causes AIDS. Research on the effectiveness of latex condoms in preventing heterosexual transmission is both comprehensive and conclusive. The ability of latex condoms to prevent transmission has been scientifically established in laboratory studies as well as in epidemiologic studies of uninfected persons at very high risk of infection because they were involved in sexual relationships with HIV-infected partners. The most recent meta-analysis of epidemiologic studies of condom effectiveness was published by Weller and Davis in 2004. This analysis refines and updates their previous report published in 1999. The analysis demonstrates that the consistent use of latex condoms provides a high degree of protection against heterosexual transmission of HIV. It should be noted that condom use cannot provide absolute protection against HIV. The surest way to avoid transmission of HIV is to abstain from sexual intercourse or to be in a long-term mutually monogamous relationship with a partner who has been tested and you know is uninfected.

## How can injection drug users reduce their risk for HIV infection?

The CDC recommends that people who inject drugs should be regularly counseled to

- stop using and injecting drugs.
- enter and complete substance abuse treatment, including relapse prevention.

For injection drug users who cannot or will not stop injecting drugs, the following steps may be taken to reduce personal and public health risks:

- Never reuse or "share" syringes, water, or drug preparation equipment.
- Only use syringes obtained from a reliable source (such as pharmacies or needle exchange programs).
- Use a new, sterile syringe each time to prepare and inject drugs.
- If possible, use sterile water to prepare drugs; otherwise, use clean water from a reliable source (such as fresh tap water).
- Use a new or disinfected container ("cooker") and a new filter ("cotton") to prepare drugs.
- Clean the injection site with a new alcohol swab prior to injection.
- Safely dispose of syringes after one use.

If new, sterile syringes and other drug preparation and injection equipment are not available, then previously used equipment should be boiled in water or disinfected with bleach before reuse.

Source: <http://www.cdc.gov/hiv/pubs/faqs.htm>